



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,886	09/29/2006	Hideki Soya	SUT-0307	8132
74384 7590 12/10/2008 Cheng Law Group, PLLC 1100 17th Street, N.W. Suite 503 Washington, DC 20036				
EXAMINER				
WILLIAMS, DON J				
ART UNIT		PAPER NUMBER		
2878				
MAIL DATE		DELIVERY MODE		
12/10/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/594,886

**Applicant(s)**

SOYA, HIDEKI

**Examiner**

DON WILLIAMS

**Art Unit**

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/29/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 10 & 14, lines 5 and 6, it is unclear what is meant by the phrase, "a first drain structure is disposed by said readout unit", due to the confusing nature of wording therein. Is "the readout unit" adjacent a storage unit different from "the readout unit for discharging excess part of the electric signal"? Or are they one in the same. For examining purpose, the readout units will be treated as one in the same. Appropriate correction is required.

Claims 11-13 and 15-16 are inherently rejected due to dependency.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Mutoh et al (US2003/0089908).

As to claim 1, Mutoh et al disclose (fig. 2) a light receiver (32, 33, 34) for receiving light by converting incident light into electric signals (charge signals) and a readout unit (37, 39, 41) for reading the electric signals (charge signals) acquired from the light receiver (32, 33, 34), (paragraphs [0059], [0060], [0061], [0062]). Mutoh et al also disclose (fig. 17, fig. 18) the CCD charge transfer path (10) creating unevenness of the potential gradient in the direction of transfer of charge signals constitutes a potential gradient is provided in which potentials about the electric signals gradually change from the light receiver toward the readout unit, (paragraphs [0012]).

As to claim 2, Mutoh et al (fig. 17, fig. 18) that portions of having low levels of impurity dopants and portions of having high levels of impurity dopants are formed in alternation in the surface of CCD charge transfer path (10) and that the amount of transferred charges can be increased by increasing the width due to the existence of extra space in the light receiver constitutes potential gradient gradually enlarging a

width of impurities forming the light receiver from the light receiver to the readout, (paragraphs [0012], [0013]).

As to claim 3, Mutoh et al disclose (fig. 17, fig. 18) that portions of having low levels of impurity dopants and portions having high levels of impurity dopants are formed in alternation in the surface of the CCD charge transfer path (10) and that the amount of transferred charges can be increased by increasing the width due to the existence of extra space in the light receiver constitutes potential gradient is provided by gradually increasing density of impurities forming the light receiver from the light receiver to the readout, (paragraphs [0012], [0013]).

As to claims 4, 5, Mutoh et al disclose (fig. 2) light receiver is a photodiode or photogate (33), (paragraph [0059]).

As to claim 6, Mutoh et al disclose (fig. 2) a light receiver (33) for receiving light by converting incident light into electric signals (charge signals) and a readout unit (37, 39, 41) for reading the electric signals (charge signals) acquired from the light receiver (32, 33, 34) characterized in that a potential gradient is provided in which potential (36, 36a) about the electric signals gradually change (transfer) from the light receiver (32, 33, 34) toward the readout unit (37, 39, 41), (paragraph [0059], [0060], [0061], [0062]).

As to claim 7, Mutoh et al (fig. 17, fig. 18) that portions of having low levels of impurity dopants and portions of having high levels of impurity dopants are formed in alternation in the surface of CCD charge transfer path (10) and that the amount of transferred charges can be increased by increasing the width due to the existence of extra space in the light receiver constitutes potential gradient gradually enlarging a

width of impurities forming the light receiver from the light receiver to the readout, (paragraphs [0012], [0013]).

As to claim 8, Mutoh et al disclose (fig. 17, fig. 18) that portions of having low levels of impurity dopants and portions having high levels of impurity dopants are formed in alternation in the surface of the CCD charge transfer path (10) and that the amount of transferred charges can be increased by increasing the width due to the existence of extra space in the light receiver constitutes potential gradient is provided by gradually increasing density of impurities forming the light receiver from the light receiver to the readout, (paragraphs [0012], [0013]).

As to claim 9, Mutoh et al disclose (fig. 1) an image capturing apparatus that takes in optical images of a photographic subject (object) with the light receiver (31) converting the taken-in optical image into electric signals and has a crystalline lens (21) for taking in the optical images of the photographic subject (object), (paragraph [0057]).

As to claims 10, 14, as far as the claim is understood, Mutoh et al disclose a light receiver (32, 33, 34) for receiving light by converting incident light into electric signals (charge signals), a readout unit (37, 39, 41, 44) for reading the electric signals (charge signals) acquired from the light receiver (32, 33, 34) and a plurality of storage units (36, 36a) for storing the electric signals (charge signals) read by the readout unit (37, 39, 41, 45) characterized in that the light receiver (32, 33, 34), the readout unit (37, 39, 41, 45) and the plurality of storage units (36, 36a) are arranged in series and a first drain structure (45) is disposed adjacent a storage unit (36, 36a) adjacent the readout unit (37, 29, 41) or the readout unit (37, 39, 41) for discharging excess part of the electric

signals (charge signals) read by the readout unit (37, 39, 41), (paragraphs [0059], [0060] [0061], [0062]).

As to claims 11, 15, Mutoh et al disclose sensor (32, 33, 34) further include a second drain structure (43, 45) disposed adjacent the light receiver (32, 33, 34) for discharging excess part of the electric signal (charge signal) in the light receiver (32, 33, 34), (paragraphs [0008], [0059], [0060], [0061], [0062]).

As to claims 12, 13, Mutoh et al disclose that the light receiver is a photodiode or photogate (33), (paragraph [0059]).

As to claim 16, Mutoh et al disclose (fig. 1) an image capturing apparatus that takes in optical images of a photographic subject (object) with the light receiver (31) converting the taken-in optical image into electric signals and has a crystalline lens (21) for taking in the optical images of the photographic subject (object), (paragraph [0057]).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DON WILLIAMS whose telephone number is (571)272-8538. The examiner can normally be reached on 8:30a.m. to 5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Don Williams/  
Examiner, Art Unit 2878

/Georgia Y Epps/  
Supervisory Patent Examiner, Art  
Unit 2878